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MEMORANDUM

TO: Joe Frank
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FROM: Sheryl Beauvais
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DATE: July 19, 2002

SUBJECT: EVALUATION OF DATA PACKAGE 195138, SUBMITTED BY AVENTIS
CROPSCIENCE, RESIDENTIAL USE OF CARBARYL

HSM-02022

Data package 195138, which contains data intended by the Aventis CropScience to be used in the assessment of residential exposures to carbaryl, has just been received for review by Worker Health and Safety (WHS). WHS's Exposure Assessment Document (EAD; Sanborn, 2001) for carbaryl is in the final draft stage. The EAD assessed both residential and agricultural exposure.

Key conclusions of the EAD with regard to residential exposure include the following: 1) Comparison of Mill Assessment sales data and with agricultural usage data from the Pesticide Use Report suggests that agricultural uses may account for about 60-80% of carbaryl sold between 1995 and 1999, implying that non-agricultural uses may account for the remaining 20-40%; 2) Absorbed daily dosage (ADD) estimates for specific residential applications of carbaryl based on monitoring data of Gold *et al.* (1982) ranged from 1 mg/kg/day for lawn applications to 12 mg/kg/day for applications to animals; and 3) ADD estimates of applicators using home and garden carbaryl products, based on data from the Pesticide Handlers Exposure Database, were 0.1 and 4.5 µg/kg/day for liquid and granular formulations, respectively.

Data package 195138 contains a cover letter dated June 20, 2002, and a report which summarized a subset of the Residential Exposure Joint Venture (REJV) residential pesticide use survey data for carbaryl applications for May to August (Lunchick, 2002). This report was evaluated and its conclusions compared to those of the EAD.

Lunchick (2002) generated a subset of the REJV May to August survey data; of a total of 4,112 U.S. households responding to the survey, the subset contained 818 households that reported possessing one or more carbaryl products. The products in these households contained between 0.126 and 80 % AI. The AI concentration reported most frequently was 5% (53% of products), mostly in dust formulations. More than half of the products (64%) were solid formulations. Liquid formulations included fruit/tree orchard sprays, house/garden bug sprays, pet sprays, and a single report of a pet shampoo.

Lunchick (2002) examined applications of 5% carbaryl dusts reported in the REJV survey. Within the subset, 180 households reported making one or more carbaryl 5% dust applications; a



total of 440 applications were reported among these 180 households. Nearly all applications (94%) were made by shaking or sprinkling dust from the container. Application sites reported for the 5% dust formulation were overwhelmingly outdoor, with 52% occurring in vegetable gardens, 24% in ornamental flowers (includes indoor applications as well), and 6.4% in lawns (Lunchick, 2002). Also, most applications (78%) involved a single site, e.g., a garden.

Nearly half (84 households; 47%) of the households applying carbaryl 5% dust between May and August made a single application in that interval, 21% (37 households) applied twice, and 12% (22 households) applied three times. The remaining 20% of the households reported making between 4 and 11 carbaryl applications. Lunchick (2002) estimated daily usage for those households who reported completely using up a container of product. Based on using a product between 5 and 8 days, this was estimated to range between 0.014 and 0.023 kg AI/day.

Households reporting use of dilute, ready-to-use (RTU) products containing AI concentrations of $\leq 0.5\%$, and households reporting use of concentrated products containing AI concentrations of 21.3%, 22.5%, and 27%, were also examined by Lunchick (2002). The RTU products accounted for 6.5% of all carbaryl products reported, and the concentrated products accounted for 22%. A total of 33 households (0.8%) reported making at least one application of RTU products, and 78 (1.9%) reported making at least one application of a concentrated product. The 33 households reporting application of RTU products made between 1 and 8 applications between May and August, with an average of 2.85 applications. The 78 households reporting application of concentrated products made between 1 and 9 applications, with an average of 3.09 applications. Concentrated product applications were likely to be applied to multiple sites, such as vegetable gardens, ornamental flowers, and shrubs/bushes; 47% of the reported applications involved multiple sites.

In conclusion, Lunchick (2002) determined the most common formulation and application conditions reported by residential pesticide users of carbaryl in a survey of 4,112 U.S. households. This information, while interesting, does not require any change in the draft assessment of residential exposure to carbaryl by Sanborn (2001). In fact, the number of applications used by Sanborn (2001) to estimate seasonal and annual residential exposures, 3.5, is within the ranges reported by Lunchick (2002). Sanborn (2001) estimated seasonal and annual residential exposures based on suggested target pest control information and maximum application rates stated on the label. These choices are appropriate, as the EAD must cover not only common exposure scenarios, but also exposures that are above average but might be reasonably anticipated to occur when carbaryl products are used according to label directions.

REFERENCES

Gold, R.E., Leavitt, J.R.C., Holcslaw, T., and Tupy, D. (1982) Exposure of urban applicators to carbaryl. *Arch. Environ. Contam. Toxicol.* 11:63-67.

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